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## INTELLIGENT PRINTING BY A KIOSK

### BACKGROUND

The present invention pertains to delivery of information in printed form and pertains particularly to intelligent printing by a kiosk.

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Travelers and others want to stay informed about what is happening in the world. Often airport newsstands only have the early morning edition of the local and national newspapers, nothing more current. When traveling, and passing through an airport, there is usually no time to wait for a paper or document to be printed out. As stated by certain marketing researchers:

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"People won't wait for money to be printed".

It is desirable therefore to arrange for ways to make available to travelers fast delivery of current news in printed form.

### SUMMARY OF THE INVENTION

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A publication is distributed by a publication delivery system. Activity around a physical location of the automated publication delivery system is monitored. The timing and number of the publication printed is based upon response to detection of an activity level around the physical location of the publication delivery system.

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### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a simplified diagram that shows a kiosk with intelligent printing features located in a public place in accordance with a preferred embodiment of the present invention.

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Figure 2 is a simplified functional block diagram of the kiosk in accordance with a preferred embodiment of the present invention.

Figure 3 illustrates a time stamp being placed on a first sheet of a printed newspaper in accordance with a preferred embodiment of the present invention.

Figure 4 illustrates a reader used to read a time stamp on a top sheet of a storage bin of kiosk in accordance with a preferred embodiment of the present invention.

Figure 5 is a simplified flowchart that illustrates use of a time stamp to assure that a purchaser gets a newspaper that is up-to-the minute current in accordance with a preferred embodiment of the present invention.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 shows a kiosk 11 with intelligent printing features located in a public place. For example, kiosk 11 is a vending machine that prints newspapers for individuals. Kiosk 11 includes user controls 12 and a newspaper delivery area 13 through which is delivered a newspaper.

Kiosk 11 has the ability to print newspapers while a customer waits. However, many customers may not want to wait for a newspaper. Therefore, kiosk 11 includes one or more response mechanisms that monitor activity around or near kiosk 11. For example, a microphone 14 sits on top of kiosk 11 to monitor noise level. In addition, or alternatively, an optical sensor 15 is placed on or around kiosk 11. Microphone 14 and/or optical sensor 15 detect when potential customers are in the vicinity of kiosk 11 and prints in advance one or more copies of the newspaper so that a current copy will be available to any customer.

Kiosk 11 also includes, for example, a receiver 16 that receives information from remote detectors. For example, an optical sensor 19, a microphone 18 and/or a motion detector 17 are placed near an entry way in order to detect new potential customers entering an area in which kiosk 11 resides. Additionally, a human monitor can be used to signal kiosk 11 to print new papers.

Thus kiosk 11 receives external inputs from sensory devices that inform kiosk 11 when there is sufficient activity to warrant printing additional newspapers. For example, within an airport, the external inputs indicate a

level of activity consistent with a flight arrival, or the gathering of passengers waiting to embark on a flight.

In addition, kiosk 11 can also print copies based on other indicators. For example, an airline flight schedule can be used to project expected activity around a kiosk in an airport. For example, departing flights with "Delayed" might indicate to kiosk 11 that more people may need a paper, resulting in kiosk 11 printing additional papers.

If in a hotel lobby, kiosk 11 can use an airport shuttle arrival as an indication of increased activity. Also, kiosk 11 can print newspapers in accordance with a schedule of when potential customers are likely to be in the vicinity. For example a 6 AM printing can occur so that individuals going to a dining area to eat a continental buffet style breakfast would have sufficient papers. From any or all of these types of inputs indicating an increase of activity in the vicinity of kiosk 11, kiosk 11 determines how many publications to print. A single human can be used to monitor an entire "bank" of kiosks, to determine if the criteria used to print newspapers is effective.

Figure 2 is a simplified functional block diagram of kiosk 11. A computing system 11 interacts with user controls 12 via a user interface 31. Computing system 32 interacts with microphone 14, optical sensor 15 and receiver 16 via a sensor interface 33. Computer system 32 also controls a printing system 34 and a finishing/delivery system 35. Finishing/delivery system 35 is responsible for folding and/or stapling a printed newspaper. Finishing/delivery system 35 also stores printed newspapers until requested by computing system 32 to deliver a finished newspaper to newspaper delivery area 13.

Computing system 32 uses a network interface 36 to obtain current newspaper print data from a network 37. For example, network 37 provides connection to an information service such as <http://www.instant-delivery.com/>.

Since kiosk 11 prints some newspapers in advance, it is desirable for kiosk 11 to monitor the newspapers to make sure that a customer is receiving current news. This can be done, for example, by computing system 32 tracking each paper printed and sold.

In the preferred embodiment of the present invention, each printed newspaper is printed with a time stamp. This is illustrated in Figure 3 where the first page of a printed newspaper 41, in addition to news 42, includes a time stamp 43. For example, time stamp 43 is a barcode that indicates a time of printing.

Figure 4 shows a storage area 51 within kiosk 11, used to store printed newspapers. The most recent newspapers are placed front-up on the top of the stack. Thus a newspaper 52 on the top of the stack has the most recent news. A time stamp reader 53 is used to read the date on top of the stack newspaper 52. For example, time stamp reader 53 is a bar code reader.

Time stamp reader 53 assures that newspapers sold include "fresh" content. When news is no longer fresh, additional copies can be printed for potential customers. Dispensing of the current news comes from the top most portion of the stack. When the most recent copies have been exhausted, Kiosk 11 displays a message on a display within user controls 12 (shown in Figure 1) informing a potential customer of how long since the news was printed and gives the customer that the option of receiving a copy immediately or waiting while a newer version is printed.

Figure 5 is a simplified flowchart that illustrates how kiosk 11 uses the time stamp to assure a customer gets a current newspaper. In a step 61, a user orders a newspaper. In a step 62, kiosk 11 uses time stamp reader 53 to determine a time the newspaper on the top of the stack was printed. If in a step 63, the time is not older than a current threshold, in a step 64, the current newspaper is delivered and in a step 65 the cycle is ended. The current threshold varies depending on the publication and market. For example, for an airport, the threshold might be as long as 5 hours or as short as 10 minutes, depending upon time of day, day of the week and/or other factors.

If in step 63, the time stamp indicates a publication time older than the current threshold, kiosk 11 sends a message through network 37 (shown in Figure 1), to the electronic publisher (source) of the newspaper, for example, <http://www.instant-delivery.com/>. The publisher, in a step 71 generates a new version of the newspaper. In a step 72, the publisher compares a checksum of the newly generated newspaper with the checksum of a current cached

version of the newspaper on the top of stack newspapers within kiosk 11. If the checksums are equal, the publisher instructs kiosk 11 to deliver the current version of the newspaper to the customer (as shown in step 64). For example, kiosk 11 calculates the checksum of a current cached version of the newspaper. Kiosk 11 sends the checksum to the publisher as part of the message sent through network 37 to the newspaper publisher.

If in step 72 the checksums are not equal, in a step 73, the publisher downloads the current version of the newspaper to kiosk 11 and instructs kiosk 11 to print (an) additional newspaper(s). In a step 66, kiosk 11 prints a current version of the newspaper for the customer. Kiosk 11 also gives the customer the option of waiting while the newer version is printed, or of immediately receiving the "stale" newspaper already printed.

In a step 67 the selected newspaper is delivered to the customer. In a step 68, the cycle is completed.

Thus, the present invention provides for fast automated delivery of current news and information to a hurried customer.

What is claimed is: